TAMPERE UNIVERSITY OF TECHNOLOGY

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ADOPTION OF STANDARDIZED PRODUCT MANAGEMENT AS AN ORGANIZATIONAL INNOVATION

Master of Science Thesis

Prof. Miia Martinsuo has been appointed as the examiner at the Council Meeting of the Faculty of Business and Built Environment on May 4th, 2016.

ABSTRACT

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Innovations are a great source of sustainable competitive advantage for companies, and generating new innovations is intended to contribute to the organization's effectiveness and competitiveness. Moreover, organizational innovations, which are inherently related to organizational performance and efficiency, have growing importance to companies in highly competitive global IT market. In this case study the adoption of new management innovations was interpreted as an organizational innovation, and used to assess the adoption process in the case company with the purpose of identifying process determinants and risks. The main research question was *"what are the risks and challenges for adoption of organizational innovations in the case company?"*. The case company is a large IT service provider operating in the Nordic Countries.

A theoretical framework was gathered based on literature review, in which five categories of variables were identified: Perceived characteristics of the innovation, characteristics of the adopter, innovation facilitation efforts, influence of social network, and environmental and external influences. Based on the framework, interviews were designed for the empirical study.

In the empirical study employees of the case company product management organization were interviewed, with the purpose of identifying how the innovation adoption process has been in the past, and how the current system related to proposed changes is seen. The results indicate that in the case company the factors related to organizational innovativeness, communication, change implementation, training, process control, and strategy related to implemented innovation were the most influential and obtained both, the greatest risk and opportunity.

Based on the research, improvement suggestions to the case company organization were proposed, which included development of organizational innovativeness and adoption process. Concrete measures included removing top down mandate, developing communication and training, proactivity from empowering employees and developing process controls, moving from mass-media communication to interpersonal channels, and using team leaders and champions to influence perceptions.

TIIVISTELMÄ

KARI-PEKKA PIRINEN: Standardoidun tuotehallinnan omaksuminen organisatorisena innovaationa
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Innovaatiot ovat loistava jatkuvan kilpailuedun lähde yhtiöille, ja ne usein tähtäävät organisaation tehokkuuden ja kilpailukyvyn parantamiseen. Lisäksi organisatorisilla innovaatioilla, jotka nimenomaan vaikuttavat organisaation kykyyn toimia dynaamisilla markkinoilla, on kasvava arvo kovasti kilpailulla globaalilla IT markkinalla. Tässä tapaustutkimuksessa kohdeyrityksen organisatoristen innovaatioiden omaksumista ja omaksumisprosessia arvoitiin sen vaikuttavien tekijöiden ja riskien tunnistamiseksi. Päätutkimuskysymys oli *"mitkä ovat kohdeyrityksen organisatoristen innovaatioiden adoptointiprosessin riskit ja haasteet?".* Kohdeyritys oli suuri IT palveluiden toimittaja Pohjoismaissa.

Teoreettinen viitekehys koottiin kirjallisuuskatsauksen perusteella, missä viisi vaikuttavien tekijöiden kategoriaa tunnistettiin: innovaation koetut piirteet, adoptoijan piirteet, adoptointiprosessiin vaikuttaminen, sosiaalisen verkoston vaikutus, ja ympäristön ja ulkoiset vaikutukset. Teoreettista viitekehystä käytettiin empiirisen tutkimuksen pohjana ja haastattelukysymysten suunnittelussa.

Empiirisessä tutkimuksessa kohdeyrityksen tuotehallintaorganisaation työntekijöitä haastateltiin nykyisten innovaatioadoptointiprosessien ja muutoksen alla olevien järjestelmien statuksen selvittämiseksi. Tutkimustulokset osoittavat että kohdeyrityksessä organisatoristen innovaatioiden adoptointiin vaikuttavat erityisesti organisatoriseen innovatiivisuuteen, kommunikaatioon, muutosjohtamiseen, koulutukseen, prosessijohtamiseen ja uudistettavien prosessien strategiaan liittyvät tekijät.

Useat tekijät nähtiin sekä riskinä että mahdollisuutena, ja tutkimustulosten pohjalta annettiin kehitysehdotuksia kohdeyritykselle adoptointiprosessin kehittämistä varten. Käytännön kehitysmahdollisuuksia olivat organisatorisen innovatiivisuuden kehittäminen ja omaksumisprosessiin vaikuttaminen. Vaikuttamiskeinoiksi nimettiin muutosten tekeminen organisaatiossa alhaalta ylös, kommunikaation ja koulutuksen lisääminen, työntekijöiden valtuuttaminen proaktiivisuuden lisäämiseksi ja prosessihallinnan kehittäminen, massamedian sijaan henkilökohtaisten viestintäkanavien käyttäminen, ja tiimipäälliköiden ja champion:in hyödyntäminen omaksumisen yhteydessä.

PREFACE

This research was made in the cooperation between the case company and Tampere University of Technology department of Industrial Management. This Master Thesis will conclude my studies in the university, which has been a great and memorable journey.

I would thank Professor Miia Martinsuo for her support during this project, and case company representatives and interviewed individuals, as their role where significant in enabling this project.

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Kari-Pekka Pirinen

CONTENTS

1. INTRODUCTION

Innovations are a great source of sustainable competitive advantage for companies, if not the greatest. Generating new innovation is intended to contribute to the organization's effectiveness and competitiveness by creating new opportunities or by making use of an existing opportunities in new ways (Drucker, 1985). However, research on innovation in organizations does not typically distinguish between innovation generation and adoption processes, as both are innovation processes and require innovativeness from the organization (Damanpour & Wischnevsky, 2006). Of course implementing change into an organization is always challenging, even when the change is beneficial to the adopting organization. Moreover, process development and strategic planning in companies are interested in knowing, how fast the organization adopts changes, and what the rate of adoption for innovations is.

This is a case study where the organizational innovation adoption process of the case company is assessed with the purpose of identifying process determinants and risks. The case company is a large IT service provider operating in the Nordic Countries. When considering innovation beneficial to companies, such as the case company, the focus is often on technologies. Development and the use of new technologies (or technological factors) are important elements to innovation, but they are not the only ones. Incorporating innovations means that the company has to take an organizational effort by adapting its methods of production, processes and management (European Commission, 1995).

In fact, organizational innovation could be a required pre-condition for technological innovation to be adopted (Lam 2004), which is why the role of organizational forces, such as capacity for learning, organizational values, common interests and power, should be taken more into consideration when shaping organization in transformation or technological change. Moreover, especially in the highly competitive field of IT, organizational innovations, such as agile methodologies, internal startups and continuous service development, are dictating organizational efficiency and, in some cases, company performance.

Currently there is an increasing need to implement changes and develop innovations, especially those related to organizational performance, since large companies focusing on service business with global delivery capabilities treat the world as a single market, where digitalization and increasing international competition are raising the importance of agile service development and flexible service delivery. This is also why developing and sharing an innovation culture in companies is becoming a decisive challenge (European Commission, 1995).

1.1 Background

The organization's ability to adopt to this kind of changing macro-environment is called organizational innovativeness, but at the same time, organizational innovations are solutions created by the organization to combat these changes. Still, it is not enough that a company develops and implements an innovation, whether it's a technology or a process, if its own organization does not adopt its use, or if some parts of the organization reject such innovation.

Some research has already been conducted in the area of implementing and adopting organizational innovations in high-technology companies. Dikert et al. (2016) predicts in their extensive review of case studies that every organization experiences resistance, even if the organizational culture is flexible, and that some employees are likely to never adapt to new ways of working. Especially when implementing agile ways of working, skepticism towards new processes is a common problem, which is often caused by misconceptions. Typical reasons for change resistance were risk-awareness, caution, deeply-rooted status quo, high employee retention, fear of new roles and responsibilities, low management commitment, and lack of training (Dikert et al., 2016).

On the other hand, success factors included visible management support, commitment to the change, engaging change leaders, tailoring processes to suit the organization, training, extensive communication and team autonomy (Dikert et al., 2016). In Francis et al. (2003) review of case studies of radical organizational transformation in technology companies, five key competence areas were identified: ability to recognize the transformation need, ability to adopt innovations, clear strategy, leadership and change management.

Clearly various different aspects influence the adoption of organizational innovation in technology companies, whether the point-of-view is from organizational change or from technology adoption. Thus very few general predictions can be made, and company specific case study is seen necessary. From previous resembling studies some conclusions can be drawn. For example, middle management is in a position to seriously harm the implementation process if management is unwilling to change (Dikert et al., 2016). Of course, for individuals operating as the source of resistance, an effort can be taken to personally involve these individuals, and valuing them and their experience (Holtzblatt et al., 2005). Moreover, lack of training and coaching, which can resolve in misconceptions, can lower motivation and resolve in unsuccessful implementation (Dikert et al., 2016).

In older studies, Hoffer and Alexander (1992), and Russo and Kumar (1992) identified in an IT organization that functionality, performance, efficiency, quality and productivity of an innovation had positive effect on the rate of adoption. From adopter point-of-view, the advantage or benefit over old is not absolute, but perceived. Thus it depends on the adopter, whether or not they see and understand the benefit or value.

1.2 Research Planning

The purpose of this paper is to identify risks and challenges related to adoption of organizational innovations in the case company organization. Here, the objective is to find factors that could prevent or slow down the adoption of new organizational innovations, related to product management processes, and suggest ways to mitigate these risks before actual innovation implementation during a large organizational change program.

This research is primarily answering a need in the case company organization, where there is a need and ongoing program to renew product management processes, and at the same time changes in standard processes and ways of working are seen as risks due organizational characteristics. At the same time this research tries to contribute to the academic society by opening doors to one professional organization, and shedding light to organizational problems and challenges in the case company.

This research is motivated by author's personal interest in accelerated and agile product development, and the research is loosely inspired by author's earlier research on cross-functional product development teams. The case company offered a great opportunity to study and influence the renewal of development activities, which limited the research focus on service development.

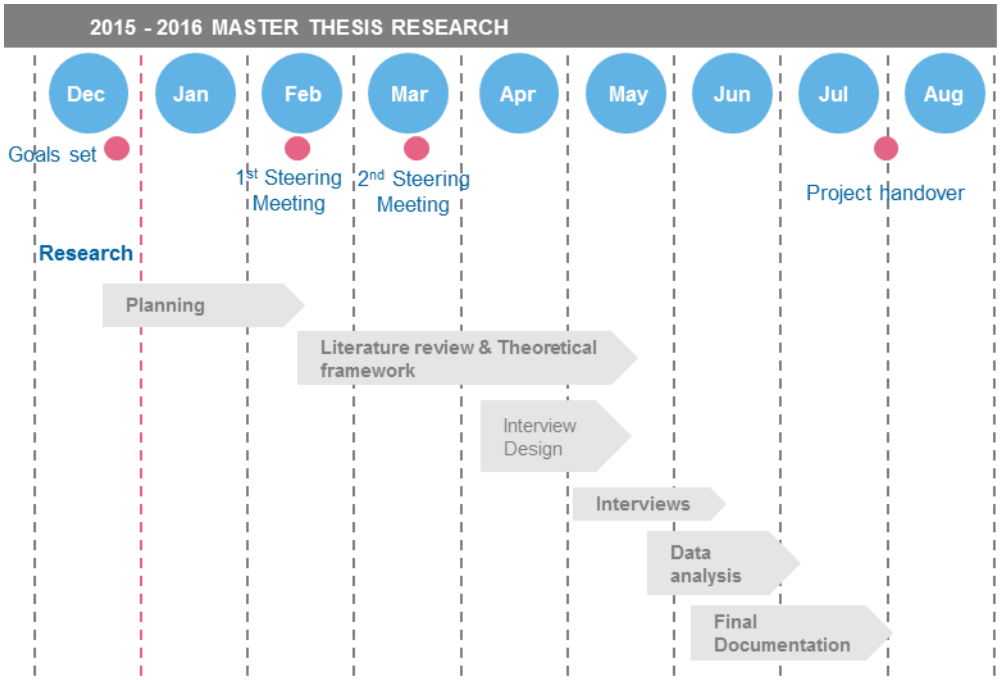

Figure 1.1 *Research timeline*

The research was performed as a project, which was divided into planning and research phases. In the planning phase in the beginning of the year, the research opportunities were reviewed and discussed both in the case company and with university representatives.

Once research was narrowed down to scope and research questions, the work was started on theoretical background.

This work was finished in April-May, but was later reviewed as new information and points-of-view was raised during interviews. Interviews based on the theoretical framework were started in August. Interviews lasted until beginning of June, due difficulties of reserving time, getting previously unfamiliar employees to commit, and finding key individuals in a large organization.

1.3 Case Company and Managerial Objectives

The case company is a large IT service provider with global service delivery capabilities. The company has long history as IT outsourcing service provider, but over the years industry specific software and product development services have grown in revenue. Currently the offering portfolio consist of range of customized services varying from purpose built customer solutions to fully standardized "off-the-shelf" service products. The company strategy follows a common trend among large IT service providers, who more and more focus on fully standardized or mass-customized services that require little or no modifications when implemented.

The case company is large organization with ten to twenty thousand employees located in various countries in Europe and Asia. Even within these countries the organization is quite scattered, with only few locations with over 1000 people working at the same site. Demographics among the employees is also somewhat scattered, with local personnel being the majority in each country, and average age being a bit higher than what is considered a norm in the industry.

The service management in the case company is divided according to service products or solutions, for example substitute service products may be managed separately. Individual service items, being part of same service, are still managed by a single product manager. Product managers are responsible for basic service architecture, technical solution, costs, and profitability, and service managers are more focused on the technical setup and continuity of the service. Both service and product managers are structured in teams, which are led by team leaders. Service management organization rarely meet customers, and most customer information is passed on by customer managers and sales support personnel.

Some service and product managers are responsible for several smaller service products that are part of similar concept or use same technologies. Typical problems faced by service and product managers, who are responsible for several products, as well as some who managed a single service product, are that they often use their time to look after the service production and deliveries, leaving little time for idea generation, idea exploration, customer interaction and future development. This is enforced by having the continuous

deliveries and customer satisfaction as the primary performance measurements, which motivate service and product managers to tend to daily deliveries.

As service provider, continuous service development and offering development are vital in keeping services up-to-date in fast-paced IT service industry. Despite best efforts, the service management and development processes lack agility and customer knowledge, and service development is left in the hands of product managers. It has been recognized within the case company that when service and product managers handle service development among other daily tasks, they tend to cut corners, reside in or recycle old solutions, overprice the new services (due lack of customer knowledge), and lack strategic vision. Additionally, service and product managers are unlikely to radically change their own service, since that will affect or discontinue their role. Moreover, since each service and product manager is also held accountable for service revenue, unhealthy competition and secrecy occurs between substituting service teams, which in turn promotes silo mentality.

The silo mentality is strengthen by the geographically scattered organization, where some of the service management is located in Northern Europe, some in Central Europe, and some in Asia, with the service delivery not always being in the same county. Similar problems are replicated also within the countries, with some sites being focused on service management and delivery, and some on sales and customer interaction. Overall, harms of silo mentality and enforcement of open organizational culture are widely recognized phenomena in the company, and corresponding change programs are taking place.

The current level of management processes in the company can be measured with CMMI framework (CMMI Product Team, 2010), in which processes are assessed based on their level of maturity. A maturity level is a defined evolutionary plateau for organizational process improvement (CMMI Product Team, 2010) and it characterizes organizational improvement relative to a set of process areas. These maturity levels are initial, managed, defined, quantitatively managed and optimizing. The current maturity level of various processes in the case company vary from managed to quantitatively managed, as some processes and functions lack detailed definitions while some are built around the case company's own certified process model. It should be noted that in order to unlock continuous process improvement, the maturity level should be on as high as possible, which is the goal in process development.

To bring change into the service management and process building, the case company has started transformation towards more agile service management processes. Thus from the case company point of view, this research is part of a larger program, which aims to update service management processes, reinvigorate in-house service development, increase the level of process maturity and transform service development efforts more towards iterative agile processes instead of large change projects. This research will support those

objectives by focusing on adoption of these new service management processes. Thus, the managerial objectives of this paper are as follows:

- To identify challenges when transforming organizational processes from customized project delivery to standardized product management.
- To shed light on current status of the product management organizations, and how the product management organizations see the need and readiness to transform towards more agile ways of working
- To provide concrete suggestions and tools to improve innovation management, especially concerning organizational innovation and its adoption, that could be replicated in other change projects and programs.

1.4 Research Questions and Objectives

The purpose of the research is to empirically study adoption of organizational innovations within the case company by concentrating on change program on its early stages. This change program is a companywide initiative, which aims to transform service management from delivery of customized services into agile production and management of standardized service products. This change is being studied as an organizational innovation, because it was designed within the company and has already been tested in few service management teams.

The theoretical part of the paper focuses on presenting a theoretical framework for managing organizational innovations in large organizations, with the aim of understanding what factors influence the speed of adoption and how the company can influence this speed. The framework operated as basis for the empirical study by presenting possible risks and challenges typically risen in adoption processes, and provide suggestions on mitigating these issues based on past literature.

The empirical study was conducted as series of interviews within the target parts of the organization, mainly focusing on service management organization and the management responsible for them. A qualitative analysis was made based on the interviews, with the aim of identifying the main risks and challenges that might slow down or object the adoption process in the target organization. Based on the analysis and the theoretical framework, concrete suggestions were presented to combat these obstacles.

Thus the research objectives of this paper are as follows:

- To provide a theoretical framework for managing the adoption of organizational innovations in a large organization.
- To highlight and predict possible risks and challenges in the adoption process, and provide theoretical suggestions on how to mitigate these issues.

- To identify risks and challenges, most affecting the adoption process, within the case company, and provide concrete suggestions on how to mitigate these issues

The research questions were set to best answer before mentioned objectives. On broad level, the main research question was:

> *"What are the risks and challenges for adoption of organizational innovations in the case company?"*

More precisely, this research focused mainly on identifying the risks and challenges, but also presented concrete solutions based on past literature. To better conduct the empirical study, there is a need to first develop a theoretical framework to understand and predict adoption process and organizational innovations, and what factors are influencing them. Hence, the more detailed research questions could the following:

> *"What factors influence the adoption of organizational innovations in general?"*
>
> *"What factors influence the adoption of organizational innovations in the case company?"*
>
> *"What potential risks and challenges are there for adoption of organizational innovations in the case company, and how can these potential risks and challenges be mitigated?"*

The identification process in the paper is performed by creating a theoretical framework based on the literature and creating the base hypothesis used in the interviews. Thus interview questions and analysis are based on previous literature. Afterwards the interview data is reviewed, summarized and analyzed, and final results are presented. Results were first gathered as a figure depicting the findings clearly, and then cross-checked with the theoretical framework, bringing empirical results back to the original framework. These final results included aspects not considered in the initial framework, as the results included subjects not discussed in earlier literature.

The research scope was limited to include the adoption of a single set of management processes or management processes. This was considered to be a single change and a single organizational innovation. The organization in the research was limited to the case company product and service management organization located in the Nordic Countries. Limitations to the research scope affected the transferability of the results and were addressed in chapter 5.4.

1.5 Structure of the Thesis

The first chapter includes the introduction to the paper and describes the background and motives for the research, the case company description, managerial objectives, and research questions.

The second chapter consists of the literature review, which first presents the theory behind organizational innovations and adoption. The aim of the literature review is to gather sufficient information and create a usable framework for the empirical research. The purpose of the framework is to predict possible risks and challenges of the adoption based on theory. Also interview questions are developed based on the framework.

The third chapter is the empirical research, meaning the interviews. First the paper presents the research strategy and methods used. Data gathering process is described including any additional observations. Interview questions are attached to the end of the paper. Third chapter also outlines the data processing and analysis methods used for the final analysis.

The fourth and fifth chapter are the research results, analysis and summary of findings. A qualitative analysis was used to categorize the responses, and to find common factors. The fifth chapter also includes suggestions for practical implication of the findings, limitations of use, and suggestions for future research.

2. THEORETICAL BACKGROUND

The following chapter attempts to shed light into the theoretical background behind organizational innovations, the mechanics of adoption of innovations and how these two influence each other's theoretically. First organizational innovations will be discussed: what are the definition and characteristics of organizational innovations and how they operate as the dynamics of organizational adaption or improvement. The second part concerns the adoption of innovations, its definition and influencing factors, and especially factors that influence the rate of adoption. The final part of the chapter combines the findings from earlier parts into a framework which shows the factors of organizational innovation that influence the success and rate of adoption.

2.1 Organizational Innovation

2.1.1 Definition

Compared to other fields of study in organizational research and general discipline of work, organizational innovation is rather young and growing area (Carrero, Peiro & Salanova, 2000). Thus defining organizational innovation can be challenging, as there are some conflict on, whether organizational innovation is a type of innovation or simply a characteristic of an organization. However, when having a view broad enough, it can be both. The fact that the term has no one definition refers to organizational innovation embracing a very wide range of phenomena (Lam 2004).

The literature on organizational innovations is diverse, and has not been integrated into a consistent theoretical framework (Lam 2004), and although the implementation of innovative organizational concepts is often considered to be very important for the competitiveness of a company, so far there has been little research on possible approaches to measure and monitor organizational innovations in largescale surveys (Armbruster et al. 2008). Several authors in their attempt to summarize the previous work (e.g. Wolfe 1994) have concluded that organizational innovation literature is scattered, at best, and that more focus should be put on discovering the primary variables that emerge whilst various innovation theories hold. Wolfe (1994) adds that, due innovation's complex, context-sensitive nature, any researcher must be clear on the environment in which any research is performed and critical about the generalization of the results.

According to Armbruster et al. (2008) there are three main branches of organizational innovation literature: characteristics of an innovative organization, understanding organizational change, and innovations that emerge from organizations, whereas Wolfe (1994) argues that the three branches are adoption of organizational innovations, variables of

organizational innovativeness and process of innovations in organizations. What is common to all of these branches, is that they try to understand the circumstances, which lead to organizational change, and analyze the triggers and paths companies take to reach organizational model that would be capable to innovate and solve problems. On the other hand, the difference is in the perspective each research branch is looking from.

According to the Green Paper for Innovation by the European Commission (1996), innovation process itself is not a linear process with limited number of sequences, but a network of interactions linking different functions and individuals, whose experience, skills and knowledge are mutually reinforcing and cumulative. This type of definition for the innovation process can be considered as joint organizational effort, which is organizational innovation as a process.

This goes hand in hand with the structuralist point-of-view into organizational innovation, described by Wolfe (1994), where the focus is on organization itself and its design parameters assuming the structural variables of the organization are the primary drivers of innovation and innovativeness.

On the other hand, the same paper (European Commission, 1996) defines "the introduction of changes in management, work organization, the working conditions and skills of the workforce" as one form of innovation result. From another point-of-view, invention and implementation of a management practice, process, structure, or technique is categorized as management innovation (Birkinshaw et al., 2008), but more importantly all these changes and transformations fit under the label of organizational innovation.

A more simplified definition is that even though organizational innovations are not included in the classical 4Ps of innovation framework, they can be interpreted as non-technical process innovations (Armbruster et al., 2008), and Damanpour & Wischnevsky (2006) go as far as suggesting all non-technical innovations are organizational or administrative innovations. However, this kind of definition deviates from the previous, as it assumes that organizational innovation is the outcome and not the process itself.

To combine these two points-of-view, a third definition is needed to combine both organizational innovation process and innovation improving organizational efficiency. Utterback (1994) and, Dougherty and Hardy (1996) have definition, where:

> *"Organizational innovation can be defined as the mechanism applied by the organizations themselves to adapt to changing conditions of the macro environment, technological advancement and market expansion by developing new products, techniques and systems."*

Here it is assumed, that innovation and innovativeness are characteristics of the organization, which organizations use to adapt to change. Thus it matters little, whether an organizational innovation is the implemented change itself, the process used to create the

innovation, or merely a characteristic of the implemented organizational changes facilitating innovation and organizational adaptation to changing conditions.

Adaption to changing environment and implementing new innovations can be achieved by creating new innovations, by adopting new innovations or both. Based on these two metrics, organizations can be categorized in a two-by-two matrix of four categories: innovative organizations, innovation-adopting organizations, innovation-generating organizations and non-innovative organizations (Damanpour & Wischenevsky, 2006).

The Green Paper for Innovation (European Commission, 1996) defines two sets of skills that an innovative organization has: strategic skills, which include long-term view, ability to identify and anticipate market trends, ability to process and assimilate information, and organizational skills, that include mastery of risk, internal cooperation between the various operational departments, and external cooperation with multiple parties, involvement of the whole organization in the process of change, and investment in human resources. Especially the organizational skills, the ability of the company to involvement of whole organization, investment in people and efficient internal cooperation, are the key for efficient adoption creating open conversation and interaction between different parts of the organization. When openness is reached, people are able to share and transfer tacit knowledge, which is one of the cornerstones for organizational knowledge creation process (Nonaka & Krogh, 2009), and important for innovation creation and adoption.

There is classification for types of organizational concept categories (Gallego & Rubalcaba, 2012). Organizational innovations can be divided based on their affects, as they tend to affect either the structure of the organization or the procedures in use. Structural organizational innovations include changes in organization structure, hierarchy, responsibilities, accountability, or information channels. Procedural organizational innovation include change in operations, processes or routines. On the other hand, organizational innovations can be divided based on if they originate within the organization or from outside. Thus intra-organizational innovations include changes originating within the organization, and inter-organizational innovations are implemented or adopted from outside. (Gallego & Rubalcaba, 2012)

Organizational leadership is linked heavily to innovation characteristics of an organization as good leadership can facilitate organizational innovation. Leadership style, where leader inspire and intellectually stimulate employees, is called transformational leadership (Bass, 1990). Transformational leaders achieve good results with charisma that provides vision, sense of mission and instills pride; with inspiration from communicating high expectations and expressing importance of tasks in hand; with intellectual stimulation by promoting intelligence, rationality and problem solving; and with individual consideration where employees are treated individually, coached and given personal attention (Bass, 1990).

2.1.2 Types of Organizational Innovations

On a general level, innovations can be categorized as radical, fast-past paced implementations with enormous affects, or as incremental, small and continuous changes. These two are often considered as opposites. Thus it can be argued that all innovations, which aren't radical, are incremental, even though the categorization is not as clear in reality, and undoubtedly the level of radicalism and incrementalism is subjective. Typically the organizational innovation, and the diffusion and adoption of innovation literature consists of studies of minor innovations and changes (e.g. Rogers early research on types of seeds farmers use), which evidently leads to the conclusion that most innovation theories are built around incremental innovations.

Of course, even incremental changes can be unique or continuous, and while most research studies the implementation and adoption of single innovation, Makkonen et al. (2016) determined in their behavioral adoption model for continuous innovation adoption, in which the adoption of incremental organizational innovations is a cyclical process. Here initiation launches the adoption process and the consideration of both possible need and the organizational innovation as a solution. The continuous activities aim to produce knowledge of these needs and solutions, and facilitate their development. Adoption activities is followed by adoption decision, which again leads to innovation implementation, which again brings the cycle back to beginning. (Makkonen et al., 2016)

According to Carrero, Peiro & Salanova (2000) radical innovation can be interpreted as an innovation that has a significant impact on the organization affecting almost all areas of the organization within a relatively short timeframe. Radical innovations tend to be apparent due to clear new technologies, changes and content of jobs, thus it may be easier for innovation adopters to make a conscious decision to adopt or reject, as they understand nature of innovation. A radical organizational innovation may affect the organization in many ways at once, as it could imply change in organizational culture, social structure and processes at the same time. This kind of wholesome change in organizational context can be conceptualized as radicalism (Carrero, Peiro & Salanova, 2000), as it is total and inevitable change.

Four characteristics were recognized while observing implementation of radical organizational innovations: the sense of innovating, organizational mission, the mass effect and the shared vision (Carrero, Peiro & Salanova, 2000). The sense of innovating refers to changing nature of innovations, and to the collective perception of the way innovative actions are perceived from the context of social interaction. Organizational mission is the general goals of the organization, but also the "personal identity" of the organization (i.e. sum of its members). The mass effect is concept of the features of the radical innovation, which can include abruptness, urgency and need. The features of the innovation determine the scope and magnitude of consequences of adoption. Shared vision refers to concept of

joined perceived necessity or need within the organization. It can be also described as “a common agreement on the necessity to change”.

One of the key differences of radical change is typically its inevitability: radical changes and adoption of radical organizational innovations are initiated top down in companies, and members of the organization are left with the single option of adapting to the changing situation. Carrero, Peiro & Salanova (2000) identified adaption process stages during implementation of radical organizational innovation as following: negative differentiation, escalation of insecurity, escalation of uncertainty, escalation of divergence, decreasing uncertainty, creative tension, inert progress and escalation of new discrepancies in sense of innovation. Obviously these stages are more related in minimizing the negative effects, rather than focusing on maximizing the positive, which can be explained by grounded theory approach of Carrero, Peiro & Salanova (2000). However, it can be concluded that since radical change often means drastic measure in wide scope within a short timeframe, which again means active managed adoption, the actions tend to focus around minimizing the negative organizational consequences of forced adoption.

2.1.3 Management Processes as Organizational Innovation

If organizational innovation is the organization’s ability to adapt to changes, where it implements new innovations, processes and ways of working to improve its own efficiency, then improvement in management processes and management innovation are included as organizational innovation as well.

Management processes, as well as other processes, as an innovation require particular set of knowledge to be innovated and implemented. The process innovation requires substantial tacit knowledge in order to externalize the knowledge, and the knowledge and innovation are highly context related (Jang et al, 2002), which lowers the ability to use the same innovation in various contexts. This means that fundamentally the organization and its management has to come up with improvement suggestions by themselves, as by definition, they are the only ones with the necessary and relevant knowledge.

Management innovation (sometimes called *administrative innovation*) can be defined as something occurring in the social system, which relates to changing employee roles in the organization, improving organizational structure, changing organizational rules, procedures, resourcing, tasks, authority or other functions of the organization or its management (Birkinshaw et al., 2008; Sisaye & Birnberg, 2010). These innovations tend to be complex, hard to observe and their results are difficult to measure and substantiate. As mentioned in the introduction, these organizational process innovations can encourage following technical innovation.

In a large global organization, it is not enough to improve management processes in one location or in one part of organization, as same changes need to me implemented elsewhere as well. When organization innovation activities produce new management processes, which are implemented similarly to all parts of the organization, the new process becomes the new standard process in the company. Standardization of processes and products is a hot topic in the case company and important part of the mentioned large change program. Obviously, there are various positive and negative aspects to standardizing company operating processes and products, which can influence the adoption of innovations related to them.

The benefits of setting up standard operating process, based on reviewed best practices, are variations will be minimized and best quality products or services will be offered to internal and external customers (Ungan 2006). However, setting up standard processes is a complex task, in which failure can lead to inefficiency and lowered employee motivation and commitment. This is often due insufficient knowledge of either process know-how (tacit knowledge on *how to do*) or process information (ability to *understand and explain*) (Ungan 2006).

The fundamental problem with any standardization is the difficulty to provide a solution that fits for all, as depicted in the infamous Procrustean Bed myth: according to a Greek myth, Procrustes preyed upon unsuspecting travelers and offered them a shelter and a bed for the night. The trick was that, since the bed came only in one size, Procrustes chopped off tall guests' feet dangling off the end of the bed, and painfully stretched short guests until they fit the bed. Thus any adopter of the standardized process, for whom the process if not perfect, is always adopting by themselves or suffering from inconveniences, and since there is a large various group of process users, there will be differences in need.

2.2 Innovation Diffusion and the Adoption Process

2.2.1 Definition and Key Determinants

Terms innovation diffusion and innovation adoption are used in literature quite interchangeably. There are no substantial differences in these term except for point-of-view, where diffusion often refers to outside perspective to an organization and spontaneous process. Innovation adoption is more used with an inside perspective in the organization, and often is conscious or even forced decision. In this paper, innovation adoption is used as the primary term, as it is more focused on planned and conscious development decision.

Both adoption and diffusion of innovations literature heavily relies on the work of Everett M. Rogers, who is often referred as the pioneer of diffusion theory (Stacks & Salwen, 2009). This paper also builds upon Roger's theoretical framework, but questions its generic processes and applicability in knowledge intensive organizations, such as in the

field of IT. Roger (1983) defines innovation adoption process as "the process through which an individual or other decision-making unit passes from first knowledge of an innovation, to forming an attitude towards the innovation, to a decision to adopt or reject, to implementation of the new idea, and to confirmation of this decision".

Typical organizational adoption process has two stages, where in the first one there is an organizational level planning and decision on whether the innovation in question is accepted. This decision will start the second stage, in which the new innovation is implemented (or forced) on the members of the organization, who will decide for themselves whether to accept the innovation or not. According to Zaltman et al. (1973) (as cited in Frambach & Schillewaert, 2002) these stages are called initiation and implementation. During implementation, each individual will go through the adoption process on individual level, where there are up to five identified stage (Rogers, 1983)

There are some differences with spontaneous and managed innovation adoption or diffusion. It is clear that in managed and centralized adoption, decisions are left on small number of controlling individuals on matters such as when the process begins (start of implementation), who is evaluating it and through which channels implementation is made. In practice, it is typically the management of the company or the organization, who makes such decisions. In a spontaneous system, such decisions are shared and horizontal network among clients is the main mechanism for spreading innovations. In the most spontaneous systems the potential adopters are sole responsible for self-managing the diffusion for themselves (Rogers 1983). However, in this paper, the focus is primarily on managed innovation adoption.

Frambach and Schillewaert (2002) combined a substantial framework of innovation adoption determinants. According to them the major determinants of organizational level adoption are:

- Perceived characteristics of the innovation
- Characteristics of the adopter
- Innovation facilitation efforts
- Influence of social network
- Environmental and external influences

In the next few chapters these determinants are examined. Deviating from original Frambach and Schillewaert (2002) framework, here individual level and organizational level are examined at the same time to raise the idea that similar determinants are at play in both organizational and individual level, but they influence in different (or similar) ways. Chapter 2.3 will showcase the final combined framework.

2.2.2 Perceived Characteristics of the Innovation

Innovation, by definition, is an economic application of new idea (Black et al., 2012), which itself assumes that these new implemented ideas produce economic value to the organization. Similarly, European Commission (1995), defines innovation as "being a synonym for the successful production, assimilation and exploitation of novelty in the economic and social spheres".

In the context of diffusion and adoption, the innovation is required to be perceived as new by an individual or other unit of adaptation (Roger, 1983). Interpreting this definition, an innovation does not have to be new to the world, but only perceived as new by someone, for example by peers or customers. The perception of newness is subjective and determined by the opinion and reaction of the observer. Roger (1983) even broadens the definition by adding that the newness of the innovation needs not to be new knowledge, but new attitude or reaction. A person may be familiar with the innovation, but has not developed any attitude towards it nor has adopted or rejected it.

In broad sense, the perception of an innovation by members of the decision-making unit of the organization affect their decision to adopt and initiate the organizational adoption process (Rogers, 1983; Holak 1988). Perceived benefit or advantage that innovation usually has for the potential clients or adopters may exceed that of an alternative making innovation tempting for decision-makers.

This benefit or advantage can be measured in economic value, but often social factors, such as prestige, convenience and satisfaction, are the most influential ones (Rogers, 1983), but also functionality, performance and efficiency had an effect on the success of adoption (Hoffer and Alexander, 1992), and task productivity, easiness of use and task quality were positively linked to adoption (Russo and Kumar, 1992). It is important to understand that the degree of relative advantage is subjective, differing among individuals based on the perception of value. The greater the perceived relative advantage of an innovation, the more rapid its rate of adoption is going to be.

It is very typical for benefit not to be easily seen, at least by the eyes of the client, and seldom innovation has such superior characteristics, which by themselves eliminate the feeling of uncertainty. Thus information sharing may be needed to reduce uncertainty, and once on acceptable level, a decision is able to be made (Rogers 1983). On the other hand, there is a possibility to improve only the perception of the innovation, without influencing the true characteristics of the innovation, which could facilitate adoption.

According to Roger (1983), the key characteristics of an innovation influencing the diffusion (and adoption) are: relative advantage or benefit, compatibility, complexity, trialability and observability. Kwon and Zmud (1987) contributed to diffusion research by including characteristics from application implementation research, creating an enlarged

framework with task characteristics, such as uncertainty, autonomy and variety, and environmental characteristics, such as heterogeneity, uncertainty, competition, dispersion and inter-organizational interdependences. In total, the characteristics influencing adoption decision are numerous and unclear, but it can be argued that relative advantage is the most significant.

Compatibility is the degree to which an innovation is perceived as being compatible with the values, experiences, and needs of individual. Compatibility is hard to measure, since not only is the values and implications of the innovation subjective, also the values, experiences and needs of individual are subjective. Complexity, or simplicity, is the degree to which an innovation is perceived as difficult or easy to comprehend. The more complex the innovation is perceived by an individual, the higher the uncertainty, and thus higher the chance to reject the innovation (Rogers, 1983).

Trialability is the degree to which an innovation may be taken into a trial period or experimented with on a limited risk. New innovations, which can be tested within limited scope, will generally be adopted more quickly than innovations that cannot be experimented with. The trialability of an innovation resembles the chance to lower uncertainty with an concrete experiment, and gives an opportunity to comprehend the innovation better during the experiment learn by doing (Rogers, 1983). Observability is the degree to which the results of an innovation are visible to others, besides the potential adopter. Observability and visibility for peers makes it easier for individuals to see the results of an innovation, which again provides information and lowers uncertainty, and makes it more likely for them to adopt. Visibility stimulates peer discussion, as peers of an adopter ask for innovation-evaluation information. (Rogers, 1983)

2.2.3 Characteristics of the Adopter

The characteristics of the adopter need to be examined on organizational level and on individual level, as different variables are in play on different level. Organizational level characteristics are examined first, and are focused on the type of organization and its ability to be innovative. Individual level characteristics are examined in the latter, and are focused on individual's dispositional innovativeness.

Three major characteristics are recognized for organizational level, which are the size of the organization, the structure of the organization and the organizational innovativeness (Frambach & Schillewaert, 2002). According to Kennedy (1983) the size of the organization has been found to facilitate adoption. The common perception is that larger organization feel more pressure in the industry to adopt innovations, learn and develop themselves. On the other hand, small organizations can be agile and flexible, which in turn would facilitate successful change management.

The organization usually has a structure, which defines an arrangement to it. Structure is normal for human behavior as it bring regularity and stability (Rogers 1983). The structure can be formal set structure or informal natural structure. Often organization, companies and groups have some form of formal structure or hierarchy, which is depicted as organizational structure, which elevates some individuals to positions of power, as managers. Organizational structure has shown to affect adoption in the way that more formalized and centralized organizations (typically in large companies) typically initiate less innovation adoption decisions, but are more capable to handle a successful implementation of an innovation (Zaltman et al., 1973; as cited in Frambach & Schillewaert, 2002).

At the same time, the same organization has informal communication structure, which is the pattern in which the communication flows in the organization following the homophily principle discussed in chapter 2.2.4. (Rogers 1983). Communication structure may or may not follow the formal structure, and it is developed over time due individuals' behavior in the organization. The communication structure extends out of the organization and links it to other organizations and stakeholders (Orlikowski 1993), which in turn enables the influence of the external network.

Organizational innovativeness is also suggested to facilitate adoption (Morrisson, 1996), as innovativeness can be a core value and strategy of the organization, resulting in openness to innovation in hopes to pursue aggressive market strategy. Additionally, organizational innovativeness is creating a creative climate that lowers resistance related to innovation adoption (Mafabi et al., 2015). However, it is unclear how well an organization can choose to be innovative, as true innovativeness as a value is often hard for an organization to reach. Damanpour & Wischnevsky (2006) suggest that the key metric for innovation adopting among members of organization is the organization's ability absorb innovative inputs (i.e. innovativeness) from trans-organizational communication to create sufficient knowledge to adopt and implement innovations. Thus the more innovative the organization is, and the better the organizational innovations in the organization are, the more knowledge the organization can capture from the communication happening around it.

On the other hand, organizational innovation is the organization's behavior to adopt to changes. Thus, in an organization with inefficiencies and internal pressure from poor organizational processes, innovations can be created or adopted for a specific organizational need. For example, the social system (the organization) can have a consensus or majority, according to whom the new innovation is truly needed. Having a need and a solution for the need, creates better understanding how the innovation creates value, which again raises the perceived value of an innovation. An innovative organization with an innovation need could have higher rate of innovation adoption, but at the same time, create positive pressure and force adoption.

On individual level, the characteristics of the adopter are more focused on cognitive beliefs, feelings, skills and demography. When favorable, these characteristics will facilitate the innovation acceptance (Russo and Kumar, 1992). Frambach and Schillewaert (2002) argue that individual's attitude can change easily and be influenced by external variables and stimuli. This goes hand in hand with Roger's original theory, in which individual feel uncertainty towards innovation-adoption, which implies a lack of understanding and predictability, and the purpose of external influence is to share relevant information and knowledge, to decrease the level of uncertainty. (Rogers, 1983)

Thus, adopter's own demography can influence the process as well. For example, Rogers (1983) suggests that in general, age is negatively related to rate of adoption process. There is no reason to suspect otherwise on a broad level, but in a limited target population, for example in an organization of technology and business professionals, age and experience can prove otherwise. Rogers (1983) discussed to some extent about adopter categories, in which the relative importance of interpersonal communication varies, from being crucial to laggards, to significant for late adopters, to less significant for early adopters and innovators. In a traditional adoption literature, the adopter demographics have played a significant role. The main differences in rate of adoption and time it takes for innovation-decisions for each adopter category is that innovators need less time for innovations-decision than slower adopters (Rogers 1983). Innovators are willing to tolerate more risk and have less resistance.

However, for an organization composed of different kind of people, it is impossible to say how these categories affect the true rate of adoption. Thus employee demographics are inconsistent and differences often are on individual level. For example, Rai and Howard (1994) showed that age was positively correlated with rate of adoption, as more experienced IT professionals were able to see and understand new innovations and tools better. To better generalize that result, it could be argued that experience and relevant knowledge, rather than age, correlates positively with rate of innovation adoption.

From individual's point-of-view, the organization (i.e. the decision-making unit) will try influence the attitudes of the members of the organization in order to have certain innovations accepted (Frambach and Schillewaert, 2002). In few studies (e.g. Morrisson, 1996), the individual's readiness to accept innovations and tolerate higher uncertainty is determined by individual's personal innovativeness. On the other hand, individuals' readiness to adopt is also influenced by the organization success history with past changes with past failures creating skepticism, and successes creating openness (Sawang, 2011).

Rogers (1983) defines personal innovativeness as "the degree to which an individual or other unit of adoption is relatively earlier in adopting new ideas than the other members of a system". Based on the degree of innovativeness, adopters can be categorized into innovators, early adopters, early majority, late majority and laggards. However, this cat-

egorization is relative, since in an organization some individuals are always more innovative than others, even thou in general, members of that organization would be truly innovative, for example when compared to the industry level.

2.2.4 Innovation Facilitation Efforts

Frambach et al. (1998) argue that innovation supplier can have a significant influence on organizational level adoption of an innovation. Here the term 'supplier' refers to an outside party providing the new innovation or facilitating the innovation-adoption process in the target organization. The supplier or facilitator can be an outside actor, such as sales manager or outside agent, or it can be an internal facilitator operating from outside of the core organization, such as a manager or a champion. The key variable for outside influence is communication.

Communication is arguably the most influential variable, as adoption decision is essentially an information and knowledge sharing process. Communication should be understood as a two-way process of coming together, where two or more parties move closer each other in meanings where they experience and interpret events. Roger (1983) highlights that rather than one-way linear act of one party influencing another, communication is complex process. A simple definition of communication can be used when explaining certain events of adoption, such as persuading a client to adopt an innovation. But these individual events are mere parts of the total process, in which information is exchanged both ways, and, so called, change agent-client relationship may last over several iterations (Roger 1983). This means that any outside influence needs to be consistent, reactive and long-lasting.

Rogers (1983) categorizes communication channels into two: mass media channels and interpersonal channels. Mass media channel is a connection through mass media (television, social media, etc.), which enables an individual to contact several other individuals at the same and deliver a message to them. Interpersonal channel involves face to face meeting with another individual, which limits the speed but is more effective in persuasion. (Rogers 1983)

When the innovations in questions are technologically more complex, the role of communication becomes more important. The core idea is that adoption can be limited by communication, if non-adopters have yet to learn about the innovation or to be influenced about its desirability by agents or well-informed contacts (Attewell, 1992). But, according to Attewell (1992) as complexity rises, two forms of communication need to be separated: signaling (e.g. informing about existence of innovation) and technical knowledge. Simple adoption model assumes one type of signaling is sufficient, and that innovation adoption is only matter of length of time.

But if technical knowledge is required to understand the innovation, mere signaling may not be sufficient to convince the potential adopters. If this happens, technical knowledge may become a barrier for adoption, and innovation adoption pattern will follow the adoption pattern of relevant technical knowledge (Attewell 1992). There is also a possibility that technical knowledge is so immobile and so difficult to communicate to adopter group that said technical knowledge needs to be reinvented and learned in the target organization, making organizational learning a variable in the adoption process (Attewell, 1992). In these kind of cases, an organizational technical support can be a powerful factor (Igbaria et al., 1996).

According to Rogers (1983) two key influencers on adoption in social system or organization are opinion leaders and change agents. Also the support of a champion has been found to positively affect adoption (Russo and Kumar, 1992). Opinion leader is an individual who can influence attitudes or change others' behavior informally towards the desired way with higher than typical frequency (Harkola & Greve, 1995). That kind of informal position is gained and maintained by high competence, social accessibility and agreement with the norms of the social system. Opinion leaders are connected to many people in the organization (Harkola & Greve, 1995), and typically very innovative and open to innovations, but the innovations need to reflect the norms. If the innovation is against the norms of the system, then it is likely that the opinion leader will also reside with the norms. Recognizing and winning over the opinion leaders in the system can be crucial, and they are usually found in the center of the communication structure or the communication network. (Rogers 1983)

According to an empirical study by Gumusluoglu and Ilsev (2009) transformational leadership has a positive impact on employees' creativity on individual level, and a positive impact on organizational innovation on organizational level. Since, creative individuals and innovative organization adopt innovations faster, which means faster adoption, increase in individual and organizational creativity should also facilitate adoption. Thus transformational leadership should have positive affect on adoption in the organization. (Gumusluoglu & Ilsev, 2009)

Combining the ideas from previous chapters, it can be concluded that spreading awareness in the organization, transformational leadership and the support of opinion leaders are seen to have positive affect in the adoption process. Here is can be speculated that a transformational leader can be the one spreading the awareness, or in the role of an opinion leader. However, there is a risk that the opinion leader can be too outspoken and overenthusiastic, which can make the organization overly eager and fade interest (Dikert et al., 2016). Still, it should be noted that in reality, it is almost impossible to name with confidence, who the opinion leaders in an organization are.

A change agent is an individual who influences the target organization with the innovation decision, and directs it towards the desired way (Rogers 1983). Change agents are

usually powerful in influencing the social system towards change, but tend to be heterophilous with the system, since they often arrive from outside (Rogers 1983). For this reason, a change agent needs to recruit aides or win over the opinion leaders, to bridge the heterophily gap. In the end, even in a large and complex professional organization, there is a small key group of people or individuals that affect, with their own actions, the adoption decisions of others and, thus, influence the rate of adoption (Tornatzky, Fleisher & Chakrabarti, 1990). It should be noted, that a change agent can be assigned to influence an organization regardless of the organization's willingness to participate.

According to Bhattacharjee (1998) organizational incentives and control structures facilitate innovation adoption and acceptance as they may have positive affect on the motivation of individuals. In general leadership literature this approach is often referred as "stick and carrot" method. In practice, the new innovation features, such as new processes or equipment, are adopted as unavoidable core parts of the whole business process.

2.2.5 Influence of Social Network

The surrounding social network or social system can have a facilitating role in both organizational level individual level innovation adoption (Zaltman et al., 1973; as cited in Frambach & Schillewaert, 2002). Rogers (1983) defines social system as a collection of interrelated units that engage in joint problem solving to accomplish common goals. A unit in this social system may be an individual, but it can also be a group, organization or a subsystem.

Another way of categorizing the social system is into four levels: national, organizational, and individual (Zhou 2008). What binds these units together to make a system, is a common goal or objective, no matter what the unit is. The social system and its network can have a facilitating effect to adoption, or they can be setting barriers to it. The characteristics of the social system may overcome the characteristics of an individual, and promote adoption, where innovation may have been rejected without the effect of the system. Thus some adopters in the social system are voluntary and some are forced (Zhou 2008). This phenomenon is called system effect (Rogers 1983). It should be noted that with a successful implementation with system effect, the members of the organization may be left with negative perception, which can lead to growing dissatisfaction and divergence.

Another affecting variable is the norms of the social system. According to Rogers (1983), norms can be a barrier for adoption and adoption of innovations, as they define the tolerable behavior and serve as a standard, and thus are conservative by nature. Norms can be written, habits, cultural, religious or legislative, and they can operate on different levels, from national level, to an organization and to small sub-organization or a team. Norms and culture can have great affect especially for innovations coming from outside of the organization through direct and indirect influence (Venkatesh and Davis, 1999). According to case study by Orlikowski (1993), taking management culture into consideration for

all stakeholders is very important in the innovation process and in diffusion or dissemination. In her case study, Orlikowski (1993) followed few different organization adopting the same innovation, with one succeeding and another failing, due clashing cultural practices.

With interpersonal interaction, the characteristics of an individual play a significant role. Typically people are more open to others, who they perceive alike. Homophily is the degree of similarity between people, and heterophily is its opposite (Lazarsfeld & Merton, 1954; Rogers, 1983). Homophilous individuals typically share understanding, mutual subcultural language, personality traits and social characteristics. Thus, when homophily present, communication is clearer, more relaxed, and better understood, and most importantly, the communication is rewarding to both individuals. The communication is more effective when two individuals are homophilous (Rogers 1983). Moreover, lack of homophily, which is heterophily, is the one of the most distinctive problems in communications. (Rogers 1983)

2.2.6 Environmental and External Influences

The business environment, industry, national differences and the external network of the organization can also have an effect on the innovation adoption process. On organizational level, the target organization and its decision-making unit can feel pressure from the business environment or industry, if other organizations have already adopted the innovation (Frambach & Schillewaert, 2002). This may be a result of the relative benefits received from the innovations, the public perceptions related to the innovation adoption or the innovation may become the norm and dominant design of the industry.

The theory of organizations adopting innovations due surrounding organizations prior adoption is based on Rogers (1983) theory on critical mass. According to this theory, after a certain number of organizations within an industry have accepted the new innovation, the pressure to adopt the innovation will become so great that the rest of the organizations will follow. This certain number of organizations needed for this phenomenon is called critical mass, and it is impossible to predict.

In similar fashion, on individual level, business professionals may feel pressure to adopt new innovation if their business partners within their network have already done so (Frambach & Schillewaert, 2002). On individual level, the theory of critical mass will commence if critical mass of individual's network has adopted the innovation. This means that for well-connected individuals, there is a possibility of spontaneous adoption of innovations from outside organizations.

2.3 Theoretical Framework for Empirical Research

2.3.1 Key Factors in adopting Organizational Innovations

To summarize the findings in the literature review in chapters 2.1 and 2.2, a wide research framework is made (Figure 2.1) based on Frambach & Schillewaert (2002) framework, with the exception of examining both organizational level initiation stage and individual level implementation stage at the same time. This change was made based on notion that all determinants and variables of both stages exist already prior to any initiation or decision, and that studying and identifying these already existing variables is the key to this research.

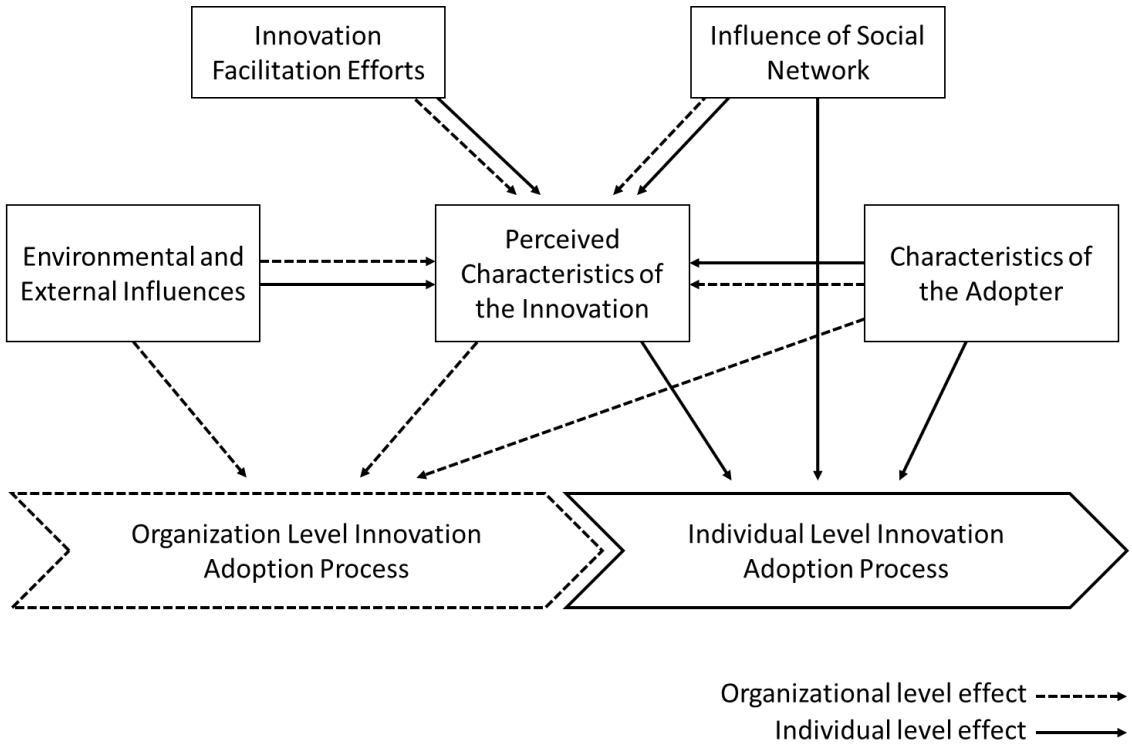

Figure 2.1. *Framework of factors influencing adoption of organizational innovation, (modified from Frambach & Schillewaert, 2002)*

In practice, often the organizational level adoption is not the key interest when looking at organizational innovations and especially processes, since the decision to initiate is often made well before any though is given whether the implementation is even possible. The decision to alter organizational processes and influence organizational innovation is often a strategic one, and the weight of different variables vary from individual level greatly.

Based on the literature review, countless variables were identified and it remained clear that countless other underlying variables exists that have yet to be revealed. Identified variables were gathered in the table 2.1 below. As mentioned, some variables were same

or similar on both examination levels, even though their effect may be different. In other areas, the variables on organizational and individual level varied.

Table 1. *Summary of organizational and individual level variables*

	Organizational Level	Individual Level
Perceived Characteristics of the Innovation	*Many variables*: (e.g. Rogers, 1983; Frambach & Schillewaert, 2002; Kwon & Zmud, 1987; Aiken & Hage, 1971; as cited in Kennedy, 1983)	
Characteristics of the adopter	Organizational structure, size (Frambach & Schillewaert, 2002; Kennedy, 1983; Rogers 1983; Zaltman et al., 1973; as cited in Frambach & Schillewaert, 2002), innovativeness (Morrisson, 1996), Organizational innovation need	Personal values, experience, demographics (Russo & Kumar, 1992; Frambach & Schillewaert, 2002; Rogers, 1983; Rai & Howard, 1994), Personal innovativeness (Morrisson, 1996), Change success history (Sawang, 2011)
Innovation facilitation efforts	Supplier efforts (Frambach et al., 1998), change agent, communication (Rogers, 1983; Attewell, 1992), champion (Russo & Kumar, 1992)	Change agent, opinion leaders, training, persuasion, communication (Rogers, 1983; Attewell, 1992; Harkola & Greve, 1995), technical support (Igbaria et al., 1996), control and incentives (Bhattacharjee, 1998), champion (Russo & Kumar, 1992), transformational leadership (Gumusluoglu & Ilsev, 2009)
Influence of social network	Pressure from social network (Zaltman et al., 1973; as cited in Frambach & Schillewaert, 2002), system effect (Rogers, 1983) norms, values (Rogers, 1983; Venkatesh and Davis, 1999; Orlikowski, 1993)	
Environmental and external influences	National differences, Competitive environment, External network (Frambach & Schillewaert, 2002; Rogers, 1983)	Interconnectedness, Network externalities (Frambach & Schillewaert, 2002; Rogers, 1983)

The process itself if fairly straight-forward. As mentioned earlier, the organizational level adoption has two stages (initiation and implementation) and individual level has five stages: knowledge, persuasion, decision, implementation and confirmation (Rogers 1983). Knowledge is the phase, when individual learns about the innovation. In this phase, individual seeks operational information to reduce uncertainty, which is why mass-media channels can be utilized effectively at this point. To simplify, the individual wants just to know what the innovation is, and how it works. This differs from the persuasion and decision phases where individual searches more innovation-evaluation information, which is subjective opinions and understandings of other people on the innovation, to lower uncertainty. Individuals typically use interpersonal networks or near-peers to gather evaluation information. Since this information is more subjective, and it could be tacit,

interpersonal channels are needed, and they can have great influence on adoption decision.

The factor that organizations are typically interested in is the speed of diffusion, which measures to speed at which individuals accept the innovation. Rogers (1983) predicts that if cumulative number of adopters over time is plotted, the distribution is an S-curve.

2.3.2 Focus Areas for Empirical Research

Alas, the empirical research conducted as part of this research paper is far too narrow in scope and not extensive enough to combat the whole scale of variables associated with the adoption of organizational innovations. Moreover, from the perspective of management of the organization planning to adopt new innovations, it is more valuable to examine variables that can be influenced prior and during the adoption process. Variables that remain unchanged, such as employee demographics, national culture, competitive environment, exists and influence always. Thus, a more focused scope for the empirical research is drafted.

For the focused scope, variables were chosen that are seen as key variables, and which the management could influence, remove or benefit from. In perceived characteristics of the innovations, the relative benefit or advantage of the innovation was seen as most likely the most important. However, since perceived characteristics are subjective, there is no way of measuring them. The closest it could be measured would be if the current alternative is seen as ineffective and unsuccessful choice, and thus there is greater chance that new alternative (new process) is seen as better alternative, and thus, more valuable.

Another factor that is focused on, is way that the new innovation is initiated, made or chosen. If new process innovations, especially business processes, are made with little or no employee involvement, there is a higher risk of employees rejecting those processes due bad process performance or processes are perceived as a bad choice. At the same time the way organizational transformation is initiated affects the level of resistance, with top management initiating most changes. When presented wrong, management implementation become “top down mandate” that people are not receptive for (Dikert et al., 2016).

From the characteristics of the adopter, organizational and personal innovativeness were seen as key metrics, as they are not only key values in most companies nowadays, but also measures of organizational efficiency. Moreover, organizational innovations, as seen as organizations’ ability to adapt to changes, are seen strongly linked. On individual level, it was seen that personal innovativeness is strongly linked to organizational innovations, and essential for moving working processes and organizational structure towards more agile model.

Communication is also seen as a key variable. Open inter- and intra-organizational communication is understood to facilitate information and knowledge sharing, which in turn lowers the level of uncertainty experienced by individuals, which promotes adoption. Thus, organizational and individual communication culture in the organization is focused on. At the same time, effect of key individuals, such as change agents, innovation champions and opinion leaders is examined. These findings and focus areas served as the basis and preliminary expectations for the empirical research.

3. RESEARCH METHODOLOGY AND MATERIALS

In this chapter the justification for the chosen research methodology is explained, and that the study is based on conscious decisions. A single method case study was chosen as the research strategy, as interviews were seen as the most crucial data gathering method, and the innovations in questions and individuals opinions on innovations are all intangible. Preliminary information for interviews was based on informal conversations with case company employees and managers and researcher's own experience. Data gathering was performed with interviews in the case company. A qualitative analysis method was used for data analysis.

This research is done as qualitative case study and the data gathering is performed mainly with interviews with employees and managers in the case company. The literature review, explained in chapter 2, was made in order to be familiar with the research topic, academic approach to said topic, and the phenomenon itself, and was used to gather and improve the interview questions and structure. The interview questions were also reviewed and developed during the interview process.

3.1 Data Collection

Empirical data was gathered mainly with interviews, which were supported by researcher's previous experience, and informal discussions. Interviews were performed as face-to-face meetings and video conversations by the researcher with the interviewees. All interviews were semi-structured interviews, with high level questions. All interviewees were promised, that their answers would be presented anonymously both within the company and in the research. Anonymity was seen necessary, as some individuals felt organizational tension and pressure, and the researcher was unfamiliar to them. Also the researcher saw that the conversations and answers would be better quality, if all individuals feel safe to answer truthfully.

In total 10 interviews were conducted, with three categorized as team leaders and the rest as team members in product and service management organization. All interviews lasted 30 minutes, as that time was always reserved for a single interview. Interviews were limited to 30 minutes due request from several interviewees, who felt that they could not spent more than that for non-task related activities. In several situations, 30 minute interview time was short and last questions may have been skipped or rushed through. However, the main focus of the interviews were on the few first questions.

During the interviews, the interview questions were discussed through and follow-up questions were asked in situations were more extensive answers were required. Informal discussions were not documented due their ad-hoc nature. Discussions where held with managers from sales support, integration, product development and innovation strategy teams. These discussions helped triangulate the expected problems in diffusion, and helped locate key individuals in product management organization. Answers were written down in the language the interview was held, and later the answers were proofread and translated to English. Great care was taken to ensure the reliability of the translations, and not to lose original context. Interviews were not recorded, because the researcher saw it unnecessary after the first interview.

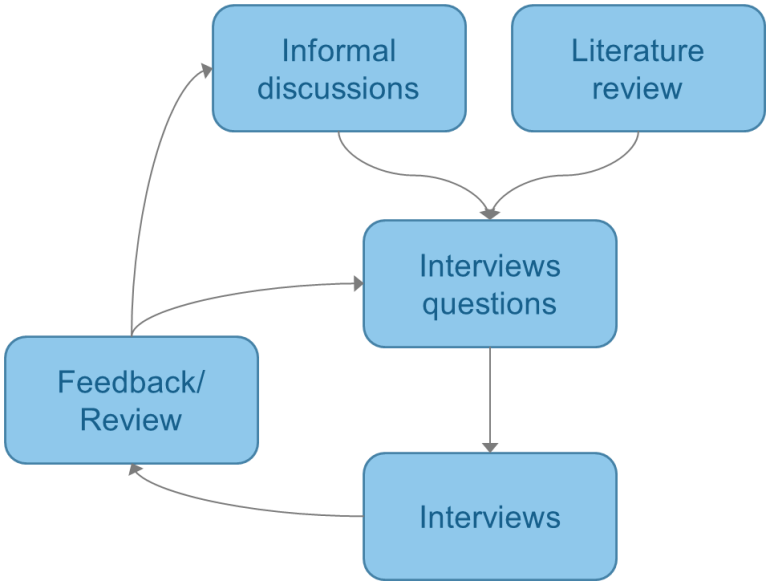

Figure 3.1. Framework of factors influencing adoption of organizational

According to data gathering process in the figure 3.1, the initial questions were made based on researcher's own knowledge from prior conversations with case company representatives and from the literature review. During planning for the interviews, two sets of questions were made: managerial and employee questions. However, after few interviews the employee question list was dropped, and the following interviews were performed with single question list. Interview questions were reviewed after first few interviews, and minor improvements were made mainly to clarify questions.

Participants to the interviews were chosen due their positions in product management organization, and as snowball process, by asking interviewed individuals, who else in their team has similar roles. Interviewed individuals were mainly product managers, and on team leader level, interviewed individuals were mainly offering managers. Potential participants chosen were from several case company locations in Finland, single location

in Sweden and single location in Czech Republic. In the end, only Finnish organization was interviewed due limited resources.

Interviews were designed to be relaxed and unofficial situations, where employees could anonymously discuss with the researcher about difficulties with organizational silos, difficulties with changes due innovations and difficulties in launching innovations. Interviewees were encouraged to open hidden pain points and own opinions, by explaining in beginning the purpose of the research, and asking follow-up questions when short answers were given.

Initial plan was to have all interviews as face-to-face interviews, as the expectation was that most of research relevant employees would be located in Helsinki region. However, it became clearer that the case company product management organization, and the organization relevant for product management, expands further in the organization than what was the researcher's initial understanding. Plans were made to interview online several people from other locations in Finland, Sweden and Czech Republic to include the geographical and cultural difficulties to the research framework. Unfortunately due limited resources, such through investigation was not feasible during the desired timeframe, which resulted in limiting the research scope to include only organization in Finland. This was seen to reduce the transferability of any findings.

3.2 Data Analysis

During data processing, it was noted that the interview data was quite unstructured, and somewhat relied on interpretation. Moreover, the interview data, meaning the answers given, did not represent any extremes, and most answers from participants where close to what the expectation was. This behavior was expected, and is result of the case company and surrounding national culture. That is why during data processing in interpretation and summarizing, special attention was given not to lose any pieces of information.

Data was processed using summarizing process, where long answers and conversations with participants were interpreted and condensed to have brief statements. These brief statements will be a summary of key points that have emerged during the data gathering. When summarizing data, the researcher will become conversant with the principal themes that have emerged from the interviews or observations and how these are explored further in forthcoming data analysis (Saunders et al. 2009). Special care was taken not to lose the context and tone of each answer.

After summarization the data was coded in order to transform the data into more comparable format. The purpose of sorting by code is to create a similarity-based ordering of the data, which replaces the original contiguity-based ordering (Maxwell & Miller, 2008). In coding, answers from all interviews were matched with research questions, and answers under similar topics from all interviews were compared. Three high-level codes

were organizational innovativeness, product management processes and product standardization. Lower level codes were added to the extent that all answers were codified.

Goals of data processing was to create a narrative, which would reflect the original answers given by interviewees. This narrative is enforced by including concrete wording from interviews in the results chapter. These quotations were chosen as the answers best describing a common opinion. In some questions two opposite opinions, which still were common opinions in their corresponding subgroups, were identified and thus two opposite pieces of narrative was created. This type of data presentation was chosen to maintain reliability in a qualitative single case study, and to create transparency into the tone and mentality of individuals in the organization.

4. RESULTS AND ANALYSIS

4.1 Overview of Results

The results and analysis in this chapter are divided into two parts. First are the pure results, observations and storyline that was raised during and from the interviews. The second phase is deeper analysis of the results. The initial results do not take theoretical framework into consideration, as that left for the analysis. During the analysis results and theory are linked, creating validation for both the theory and the empirical research.

The interview results were separated into three major categories. The first one included the organizational innovativeness and the innovative processes of the organization. This category focused on identifying the dynamics of the innovation activities and processes in the organization, and trying to answer the question, whether the organization is innovative or not. This goes back to the definition of organizational innovativeness, as there is a need to assess if the organization is able to adapt to changes in its environment.

The second category focused on the need of new process innovation. Concretely this meant identifying if there is discontent and need to develop the existing product management processes. A strong need for change can positively facilitate the innovation adoption.

The third part discusses the topic of standard products and standard offering. Already in the beginning it was recognized that product and service standardization has a great affect in product and service management, and thus influences the need of process innovations in the area. Moreover, standardization as a solution is understood as a product or process innovation depending on the changes implemented.

4.2 Organizational Innovativeness

Innovation and innovativeness in the case company was seen in somewhat conflicting way. Overall the case company uses innovation strongly in their internal and external marketing, which is not unusual in the industry. Interviewees were uncertain whether innovative processes and agile processes were actively present in everyday operations. Some innovative processes were clear, such as innovating with customers or suppliers, but general opinion was that actions were more reactive, than proactive.

> *"Are we innovative? Yes and no". "We communicate innovation strongly, and we seem we're innovative. And in many parts we also are. Still, I often feel that innovation is killed under cost pressure, and it feels frustrating"*

When discussing the innovative actions in the case company, it was clear that the organization used both internal and external innovations, meaning that both innovation creation and innovation adoption were present. The typical approach was that new product innovation from suppliers enable new functions and features, while process and service innovations, related to how these features are brought to customers, were made internally. Creating new solutions to meet customer requests was understood as internal innovation.

> *"Product innovations come usually from customers and suppliers, either as new demand or as new capability. But process innovations tend to come from within".*

Suppliers were mentioned as a major contributor for innovations, but at the same time, critique was given about lack of suppliers' concrete actions. After brief conversation it was clear that with several suppliers the situation followed typical industry problem: innovation and innovativeness were strongly present in communication and marketing, but concrete actions were not matching with the company message. Process innovations rarely came from suppliers.

Standardization of processes and cost pressure were mentioned as factors decreasing innovativeness in processes. Additionally, a key theme coming from the interviews was that organizational processes were not clearly seen as innovations, but as *changes.* This was clearly seen in few cases were initial questions about innovations were understood to concern only product (or product paradigm) innovations. Partly this is understandable due to strong image of product innovations as the primary reference for new innovations. Partly this is concerning, as it increases the difficulty to improve process maturity through innovation, and major potential in the organizational process innovations is lost due lack of appreciation and perceived value.

In their narration, interviewees often separated innovation activities in the organization to mean activities aiming for product development and process development. Innovation activities in the company include in different areas: product development, listening to customers, answering to new customer requests, adapting to competition and adapting to legislation. Different activities are used with different purpose in mind.

> *"Many development ideas have come from within. Often ideas are raised from customer customization, meaning that we have customized something, then it has been seen as rather good, and we have decided to make it standard or available for all. Sometimes the customer asks something we don't have, and then we have to move quickly. Also our suppliers have good ready-made processes we could benefit from. With my product the suppliers are in a key position: we need to meet with them continuously and we are constantly making small improvements."*

Some interviewees saw the case company to operate well with process development activities, and especially process descriptions and definitions have improved. Key individuals were also understood to have great influence in process development and adoption

(e.g. team leaders, managers). Some interviewees also mentioned ITIL (Information Technology Infrastructure Library), which is a framework of best practices for delivering IT services, and commonly used in IT service business. Adopting industry best practices as standard operating processes would be an easy way to improve process maturity, and is interpreted as innovation adoption.

> *"Process development comes from our people, from their skills, experiences and knowledge. It is also a lot to do with people's creative skills: are they motivated, are they creative. On the other hand, ITIL can help. There is a lot of knowledge embedded in ITIL and I think studying that will bring good process development ideas, not just to service delivery but to product development as well"*

Few interviewees saw the case company as non-innovative organization, and as a technology follower in the market. These individuals also mentioned that any process development made in recent years has been made top down in the organization with management asking no questions or opinions from lower levels of the organization. These had resolved in concerns about future management changes.

> *"Hard to say where innovation come from. Often concrete changes come top-down. I feel that there hasn't been much changes."*

> *"…we don't have good process for gathering insight from markets to be proactive. We are usually reactive."*

Overall, the effect of process development in the organization, especially in product management, was seen as somewhat minimal. Most interviewees considered their working processes to have remained the same regardless of the changes. It can be argued that minimal changes in working methods means that changes have not created any tension or uncertainty in the organization, and have been implemented successfully,. On the other hand, no improvement in efficiency or simplicity was seen either. No information was available on process KPI measurements.

> *"Have innovation change the way you work during your time in the case company?*
>
> - *No not really. Only my role has changed*
> - *No they haven't, besides defining the role of product manager.*
> - *Not much, since we already had processes in place before standardization."*

Communication of new innovations, both product and process innovations, happen with mass media channels: group emails, webcasts, news pages and video conferences with large audiences. Many interviewees admitted to pay little or no attention to these mass

media channels, as they were seen as time consuming and even as waste of time. Concerns were raised about lack of sufficient innovation information prior to implementation.

> *"I don't really follow company intra or news feed myself, but now we are starting to use it more even for team internal communication". "The company intra is a slow channel, I don't have time to read it. There can be something interesting but all the necessary things come to me through other people personally"*

Recognition was given to unofficial and personal channels: people informing one another through personal contact or email, team meetings and office conversations. In some cases, personal channels were the primary channel for individual to look for information in a problem situation. When discussing innovation communication, team meetings and random conversations seemed to be typical ways of learning about new innovations, tools and methods.

> *"How do you learn about new innovations in the company?*
>
> - *In our team meetings that are semi-formal. Also in daily conversation with customer teams, when solving problems or while just having conversations.*
> - *Team meetings, intra and unofficial channels, like the coffee machine are important."*

No attempt was made during interviews to identify and name office opinion leaders, but team leaders were mentioned to have influence. Direct mentions were made about team leaders' behavior reflecting in their team members. Undoubtedly other non-management opinion leaders exist in the organization, who could be identified to further influence innovation and process adoption.

> *"I feel that one of the most important factors affecting processes, is how team management sees the processes. If they have too relaxed point-of-view that is reflected to everyone in their team."*

4.3 Product Management Processes

Overall product management processes in the case company were seen as reasonable, even though it was noted that said processes have not been in place for long. Current standard product management processes were implemented in the organization few years ago by managerial decision. This had resolved in quick implementation and adaptation, but resolved in increased tension, lack of understanding and spreading divergence. Increased tension was recognized as growing paradigm of separating "us and them", and as increased risk of silo mentality. Divergence was present as customized processes that typically were lighter than standard processes skipping unnecessary steps. From maturity

point-of-view, changes had improved the level of standardization and repeatability, but lack employee support and valid performance measurements.

> *"Processes are sometimes complex, and earlier they were even badly described. Nowadays its better"*

> *"All processes are defined well. When they were implemented some time ago, it was a turbulent time with lots of uncertainty. Now it's better. Some processes are very generic, and we have to adjust them to meet the customer or project need. Processes have been developed and changed, but I don't really see any change in practice. I haven't made any change requests to processes, but I have given feedback"*

> *"There has been clear development, and current set of product management processes is quite 'ok'. Overall our processes tend to be quite heavy, and we definitely need something lighter. This is understandable, since "they" try to create processes fitting for all. In our organization, we already had processes in place before current system, and it was pretty similar. Now we have adjusted our previous model to fit into the new system. Downside is that the new system was created without asking anyone, what the need is and what the current model is. And a large part of the templates in the process are only from one part of the organization."*

Topic that kept rising while discussing development of product management processes, was that major changes were implemented few years ago and little development was made afterwards. Varying opinions exist about their success. Key points from the narration are clearly the problems that come from generic standard processes, and from management implementing new process innovations and implementing forced adoption of innovation to product and service managers.

Little or no customization was left in the process, which has led to adjustments in some parts of the organization. This has been regulated with process gateways and control points. Some managers referred to this discipline as "stick & carrot" method, which was seen reasonable and working in limiting divergence.

> *"…we have adjusted the processes. But there are some processes and tasks in product management that standard process is required by the management in order to get acceptance to proceed or to get funding"*

Product development efforts are typically kept separate from continuous service product management, even though the product manager participates in the development activities. Whereas process development is made by service teams themselves, as long as it does not contradict with the standard process. Depending on the service product in question, small improvements and small development can be implemented by the product managers or

product owners themselves. Problems of the product management organization identified during conversations were related to lack of time, lack of customer understanding and contact, lack of unified development vision and lack of development funding. There were some comments that slow development cycle and hardships have resolved in decreased motivation in some areas.

During one conversation offering development, which is the development of service offering and service packaging, and continual service improvement, which is the development of service core functions and quality, were pointed out as separate processes. Since the company message about innovation is strong, it is often shown to customers as development in offering. Meanwhile the service improvement activities can be lacking, which results in no changes in the actual core service processes and functions.

> *"Current processes are pretty bad. Basic setup is in place, but using processes with customers is worse. We are missing Continual Service Improvement, whereas Offering Development is good."*

When discussing about roles, responsibilities and processes in product management, a clear lack of unified understanding was present. Since this has been clear deficiency in the organization, some development activities have been made during last few years. Still, several notions were made that this work is far from done.

> *"No, both roles and processes are not well defined. And not only in product management. I think the roles and their responsibilities and unclear, which shows in process inefficiency: people don't know who does what. Also nowadays everyone is adjusting the processes. 3 years ago when the processes where implemented, they worked well. Now there is less discipline, so everyone has started to adjust, which again causes unclarity. The processes should not be carved into stone, but they should be defined in the way that they give operating boundaries, within to work. Then processes would be clear for everyone."*

Some divergence can be identified in the roles and their responsibilities even in such a small organization as product management. In some cases roles have been written by team leaders themselves, and they might deviate from standard roles descriptions.

> *"At least my old role (in previous company) was clear. Processes and tools were unclear and unfinished in the beginning (in the case company). Now it's better. Service Manager role is very much depended on the product, and it varies a lot. For my product, I wrote the Service Manager description myself. Of course the role is influenced by person's own skills."*

Overall several interviews included stories of setting up or clarifying product management related operating processes and roles during past few years. It remained unclear

whether these actions have had positive, negative or any influence in the product management processes, as some of the work is still underway. Some notions where that it is likely that changes have had and will have little or no affect. Moreover, concerning development plans, there is a clear vision and direction in offering and product development, but less so in process development. This was also visible as lack of goals and targets in process development.

> *"Now there is a clear direction in product development. Earlier we were reacting in ad-hoc basis. First we had the goal of removing white spots from our offering. For processes we are now working with what we have."*

4.4 Product Standardization

Product standardization is a popular discussion topic within the case company as it's strongly present in the internal and external communication of the company. Service product standardization is dividing opinions within the company, as there is some controversy on what the actual definition of the term is, and how the concept of standard product is utilized in the company strategy.

> *"It's good that we have a portfolio of the service (products). The problem is that "standard product" is a weapon and an excuse; it is too easy to use it as an excuse to explain why we are not doing something. The fact that a product is standardized does not mean it is holy and should not by changed, or tailored. Product is standardized, but we can still develop it continuously based on customer demand."*

> *"Company's products are standardized from product management point-of-view. In reality we sell something else, and each country varies. For example, in one country sales is more easily accepting to customize, and they avoid heavy standardization. In another country the standard services fit the customers better. We should offer more standard services, and avoid customization."*

There is a clear separation between standard offering and standard processes as the core of the service. Some interviewees thought that company's offering is standard, but not the core services, while others had an opposite opinion.

> *"We have few products that resemble standard services. In the majority, the content of the service is not defined. Also a problem is that customer orders are neither standardized. Since the order is not standard, we can't offer our standard, and customer won't buy our standard. We do have ongoing efforts to increase the level of standardization. Services delivered from shared environment are easier to standardize, than services form or in customer specific or customer dedicated environment."*

In practice the case company is following a differentiation strategy in the market, as its strengths include customer satisfaction. Partly new guideline for strong standardization follows a common industry practice to develop more scalable solutions. Also in the company history, customer specific solutions have created some problems, which is also why fully customized services are no longer offered.

> *"No "off-the-shelf" (products). Customer tailoring. We get lot of criticism that we are not flexible enough, and when we do actually tailor our services, we get good feedback. The product structure should include some flexibility and tailoring opportunities. Tailoring is our advantage. We are in the end quite flexible. We need to rely on customer service and being close to customer. The risk is that we distance ourselves too much by moving to low-cost countries."*

4.5 Analysis of the Interview Results

Organizational innovativeness in the case company is seen in variety of ways. Thus it can be argued that in fact the organizational innovativeness is on different levels in different parts of the organization. This was clear as differences between different teams and individuals, as some individuals who felt that no changes have been made recently or that development efforts were not succeeding, also claimed the innovativeness to be less than good. This can be interpreted as a sign that achievements in teams are not often communicated to other teams, in order to create an atmosphere of optimism and creativity.

Innovativeness as organizational value and culture was identified to be in a good level: innovations and innovativeness was valued and concrete actions to create and improve innovativeness were part of daily operations. Innovative actions in the company were divided: reactive behavior to changing customer requirements and to changes in the industry was effective, but proactive measures were lacking. Thus, no internal drive towards proactive innovation and improvement was identified, which is seen also as low motivation to adopt new innovations. Proactivity would be improved with long-term product planning and empowering product management organization to implement changes with limited approval procedures.

Process innovations (and management innovations), as part of organizational innovation, were not seen valuable and as *true* innovations. There is a risk that new processes are dismissed as minimal changes, which can resolve in low motivation and low commitment to adopt (non-technical) innovations. A paradigm shift is needed to improve the value of non-product innovations, not only to improve process innovation adoption, but also to remove the risk of losing innovation opportunities due their value being undermined.

Innovation implementation mechanism has previously followed a 'top down' method, which has a risk of becoming a mandate thus increasing resistance. This has already happened in some areas, which is seen from direct comments regarding disappointment with

changes coming from top management. Top down mandate could be avoided by employing opinion leaders or champions for the new innovations, with the purpose of informing employees on true benefits of new innovations. Individuals causing resistance can be employed and empowered to bring forth improvement suggestions, to have whole organization involved.

Communicating new innovations in the company was primarily done with mass media channels that were seen as ineffective from employee point-of-view. These channels could be developed with the purpose of better and more clearly being the internal source of valid and reliable innovation information, combined with technical (and non-technical) support channel. However, mass media channels cannot be the only source of information, which is why more emphasis on interpersonal channels is needed, in order to secure successful adoption.

Organizational Innovativeness	**Factors**	**Status**
	• Organizational innovativeness	*Good. Divergence in perception.*
	• Innovation actions	*Good, sometimes reactive.*
	• Process innovations	*Paradigm shift needed.*
	• Innovation implementation	*Top down mandate is a risk*
	• Communication channels	*Inefficient mass media, low emphasis on inter-personal*
	• Opinion leaders	*Team leaders important*
	• Training & coaching	*Insufficient training/coaching*
Product Management Processes		
	• Status of processes / Need for change	*Processes accepted, minor needs of development. Reasonable maturity level. No agility achieved.*
	• Control & incentives	*Process gates for control.*
	• Continuous improvement	*Limited.*
	• Divergence	*Divergence in roles and operating processes.*
Product Standardization		
	• Status of standization / Need for change	*Strategy of standardization unclear. Divergence in perception.*
	• Continuous improvement	*Good offering development, limited continual service improvement*
	• Divergence	*Divergence in level of standardization among products and product strategies. Also attainable level of standardization varies in products.*

Figure 4.1. *Results of the analysis: categorized factors and their identified status in the case company.*

Team leaders and middle management were identified to be crucial to the success of any adoption program. Other opinion leaders weren't identified, but based on literature on the subject, other hiding opinion leaders undoubtedly exist. During change programs an effort should be made to identify, win over and empower these opinion leaders, as they have tremendous unofficial influence in the organization. Champions were not used as part of change management or service development. The use of champions as part of larger changes could be assessed in the organization. Additionally, both team leaders and champions can be used for interpersonal communication and knowledge-sharing.

The status of product management processes was rather acceptable, with the most significant lack in the low maturity of the processes, which could not enable agility (which was the case company goal). Lack of agility was visible in the product management organization, which can act as motivator for change. Low control and incentives were set on the processes, which were not seen to motivate their use and enabled divergence. Some control measures were identified. Both controls and incentives should be improved to better motivate change, and change adoption.

Continuous improvement in product management was limited in scope. As many interviewees mentioned, some changes had been made during past years, but few concrete changes were made to product management routine. Similarly, to proactivity, continuous service development could be enabled by empowering product management organization to implement changes continuously and in agile manner. On the other hand, continuing with low proactivity may fuel further disappointment with organizational innovativeness and top management's ability to make changes.

Divergence in operating processes and roles in product management was quite high, which can complicate the change of operating processes. Divergence was enabled by low process control, dissatisfaction on process efficiency and low employee motivation to follow standard processes. Motivation originated from perception that standard processes were not applicable to each and all services (or products). This divergence could be addressed by involving individuals with dissatisfaction into the planning and development process of new operating procedures.

Product standardization, as part of product management, was seen to lack unified strategy and lack of common understanding on what is the target level of standardization and what is the meaning of 'standard product'. The lack of common understanding is affecting offering and continuous service development, as there is understanding that standardization is an obstacle to changes and development. Misconceptions related to product standardization should be addressed in the organization.

There is also a divergence on the level of standardization among the company products, and a difference on what is the highest achievable level of standardization. Since there is lack of unified vision on standardization strategy and difference on product standardizations, it is fair to say that such situation cannot be maintained. During standardization strategy planning, an effort should be made to address the way different products are standardized.

When mapping these findings with the theoretical framework proposed in the chapter 2.3, it is clear that identified factors count only a portion of the possible factors and determinants (table 2). After the summary of finding in figure 4.1, it is also clear that factors don't have an equal weight since they have different ways of affecting the organization and individuals.

Table 2. *Matching analysis findings with theoretical framework*

	Organizational Level	Individual Level
Perceived Characteristics of the Innovation	Relative advantage of innovation, improved by dissatisfaction with status quo	
Characteristics of the adopter	Organizational innovativeness, Organizational innovation need	Personal experience, Personal innovativeness, Change success history
Innovation facilitation efforts	Change agent, communication, champion (if used)	Opinion leaders (team leaders), training, communication, control and incentives, transformational leadership
Influence of social network	Norms related innovativeness and process control, social network if it includes the opinion leaders	
Environmental and external influences	-	-

Factors related to perceived characteristics of innovation and characteristics of the adopter (especially organizational innovativeness) where recognized as most influential and most discussed topics. Whereas innovation facilitation efforts were seen in more enabling and supporting role in the adoption process, with the exception of team leaders having great influence as opinion leaders.

The influence of social network was seen as minor and indirect, as the norms related to organizational and personal innovativeness and process control may influence the overall innovativeness and commitment to new operating procedures. Also the team leaders as opinion leaders may influence indirectly through the social network of employees.

No environmental or external factors were identified, even though there is a possibility of competitive environment influencing organizational decision to adopt innovations. As discussed in chapter 2.3.1, the factors that remain unchanged and uninfluenced during innovation adoption process (such as environmental and external factors) are not the key targets of this research. This result is also due the research focusing on active product management organization and not the senior management of the company.

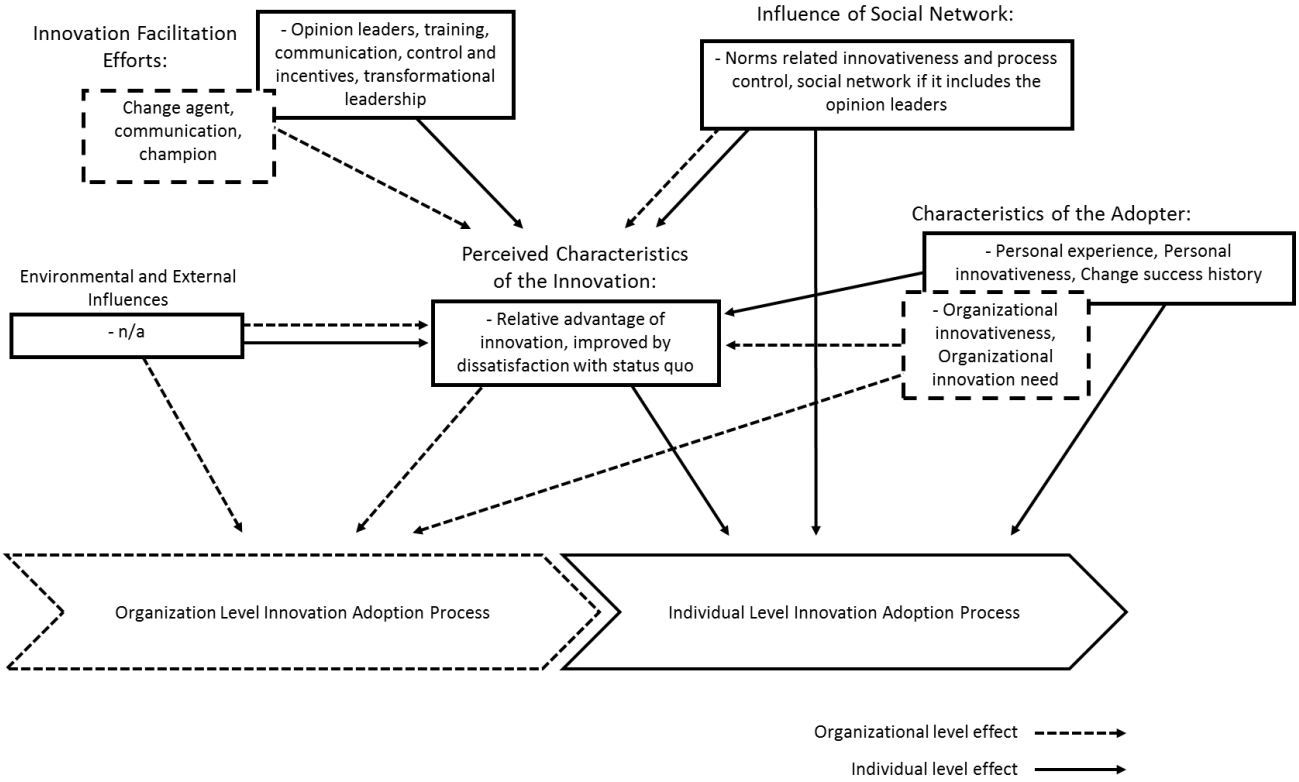

Figure 4.2. *Research findings in the framework of factors influencing adoption of organizational innovation, (modified from Frambach & Schillewaert, 2002)*

Comparing the results in figure 4.1 and table 2 to figure 2.1, we can see the dynamics of the variables have followed the same pattern, and thus figure 2.1 can be updated with the identified case company specific findings. Clearly on the organizational level the only directly influencing factors are the relative advantage and the organizational innovativeness. Relative advantage is subjective innovation specific variable, but can be influenced by individuals (change agent, champion, etc.), organizational innovativeness and innovation need, and norms of the organization. Thus in order to secure adoption and facilitate the adoption process, these measures need to be taken. On the other hand, organizational innovativeness is a passive characteristic of the organization, which is developed over time. This means that if the management of the company wants to influence the organizational innovativeness, the actions need to be continuous and long-term plans need to be developed.

On individual level, similar setup is in place. Here the perceived advantage and individual's personal experience and innovativeness have direct influence. On individual level, opinion leaders, training of personnel, control measures and leadership actively influence the opinion that a person creates about the new innovations, whereas norms and person's social network have more passive influence. From a management point-of-view, training, effective communication and leadership can be used to influence the personnel on a personal level to raise the perceived value of the innovation, while norms require similar continuous actions as development of organizational innovation.

5. CONCLUSIONS

The final conclusions of the paper can be divided to ones with academic and managerial contributions. Overall as conclusions, the recognized factors influencing the organizational innovation adoption are gathered in figure 4.1 and 4.2, and in table 2. As these factors influence the success rate and speed of adoption, most of them are, at the same time, opportunities and risks. As part of change management and process development, these factors should be addressed.

5.1 Meeting the Objectives

The academic contributions of the paper are the literature review and framework compromised from it (figure 2.1 & table 1). Even though the subject has been researched to some extent in the past, in the framework an existing model based on Frambach & Schillewaert (2002) was extended with additional factors. It should be noted that Frambach & Schillewaert (2002) framework was not empirically proven, which is why any empirical testing of the framework is valuable. According to this framework five categories of influencing factors were identified.

The objectives of this paper revolved around recognizing factors that could impose risks during process innovation implementation, process development and process related change management project. These objectives were met on both academic and managerial level. The theoretical aim of the paper was to *provide a theoretical framework for managing the adoption of organizational innovations in a large organization*. This framework was presented and described in figure 2.1 and in more detail in table 1. In these the different factors of organizational innovation adoption are presented divided in scope to organizational level and individual level, and in context to five categories: perceived characteristics of the innovation, characteristics of the adopter, innovation facilitation efforts, influence of social network, and environmental and external influences.

The empirical study was conducted as a single case study, which was further limited to a single part of a large organization. Thus the transferability of the results is low. However, as mentioned, any empirical testing of the framework helps give insight into industrial organizations.

Several more detailed questions were set as the research questions. The main research questions was (described in chapter 1.2):

> *"What are the risks and challenges for adoption of organizational innovations in the case company?"*

The risks and challenge identified in the research context in the case company were related to variables (shown in Table 2 and in figure 4.2) of relative advantage of innovation (improved by dissatisfaction with status quo), organizational innovativeness, organizational innovation need, personal experience, personal innovativeness, change success history, change agent, communication, champion (if used), opinion leaders (team leaders), training, communication, control and incentives, transformational leadership, norms related innovativeness and process control, and social network if it includes the opinion leaders. As mentioned earlier, these variables are divided into four categories with environmental and external influences being minimal or non-existent in the research context.

Moreover, after breaking the main topic into subsections there are following sub-questions:

> *"What factors influence the adoption of organizational innovations in general?"*

This question was answered with the preliminary framework (Table 1.), in which four major categories were identified based on literature review. This framework was gathered with the purpose of general usage, and thus its generalizability and transferability is considered to be good for further research with the case company, in the field of IT or in other knowledge intensive fields.

> *"What factors influence the adoption of organizational innovations in the case company?"*

Continuing from the general level in the previous question and the preliminary framework in Table 1, a case company specific framework was made based on the research and analysis, which is shown in Table 2.

> *"What potential risks and challenges are there for adoption of organizational innovations in the case company, and how can these potential risks and challenges be mitigated?"*

This is answered from a risk management and change management point of view. Findings in figure 4.1 include subjects of risks (and opportunities) and challenges that were presented to the case company and target organization management. The mitigation and development efforts suggested in this paper revolve around empowering the product management teams, developing proactivity, developing long-term product plans, aiming towards paradigm shift in innovation communication, developing communication and assigning team leaders or champions in special roles during innovation adoption program.

Thus, all research questions were answered successfully with the theoretical framework providing answers to the questions on general level, and the empirical study and analysis providing answers to the questions on the case company level. To conclude, the thesis reached its aims and answered the research questions well.

5.2 Managerial Contribution

The case company is performing a large change program, and as part of this program, product management organization's operating procedures, processes and roles are updated with the purpose of enabling agility in daily operations. The success of this program and these changes are depended on the variables and determinants influencing the innovation adoption process in organizational and individual level, out of which a theoretical framework was gathered in figure 2.1.

The managerial aim of the paper was more focused on to identify challenges when transforming organizational processes from customized project delivery to standardized product management, to shed light on current status of the product management organizations, and how the product management organizations see the need and readiness to transform towards more agile ways of working, and to provide concrete suggestions and tools to improve innovation management, especially concerning organizational innovation and its adoption, that could be replicated in other change projects and programs. These objectives were answered in chapters 4.1 and 4.2 with summary of findings in figure 4.1, from which findings were matched with original framework in table 2.

This thesis helps shed light on possible risks and influencing opportunities based on empirical study in the case company. The findings (in figure 4.1 and 4.2) of the interviews and analysis suggest that the case company should make on effort in the area of organizational innovativeness and innovation adoption process, as well as in planning of product management processes and product standardization strategy.

The finding indicate that top down mandate of implementing changes is harmful to organizational motivation, process development is not seen as valuable innovative function, the communication of innovations should be developed and innovation related training should be applied as part of the innovation adoption process.

Agility and proactivity could be improved by empowering product management organization more, and by developing clearer long-term product strategies. On the other hand, empowering could be limited at first and controls should be developed in order to limit divergence in processes. Divergence could be addressed by increasing cross-team communication.

Innovation communication should be developed, with the future emphasis being on interpersonal communication rather than mass-media communication. Mass-media channels could offer an effective source of complementing information if further developed. Team leaders and champions could be used as source of information and for interpersonal knowledge sharing. Cross-team communication should also be used to communicate achievements in different parts of the organization, in order to create an atmosphere, which celebrates innovation and changes.

In product management processes the status quo was questioned as well as the process control measures. In standardization, the product standardization strategy was unclear in the organization, which led to misconceptions. All in all, the managerial contributions of the thesis are development suggestions and identified innovation project risks. More detailed case company internal material was developed based on the thesis findings, and provided to the company as separate of this paper.

5.3 Validity and Limitations

This chapter focuses on assessment and validation of the research and its results. When assessing the criteria of qualitative research, reliability and validity are most common criteria. But as qualitative research, especially one with interviews and individuals as data source, is highly context related, alternative criteria should be assessed as well. In addition to the two aforementioned, transferability is assessed, as it may give better insight into the success of the research.

According to Joppe (2000), reliability can be defined as:

> *"The extent to which results are consistent over time and an accurate representation of the total population under study is referred to as reliability and if the results of a study can be reproduced under a similar methodology, then the research instrument is considered to be reliable"*

Moreover, there are three factors to reliability: repeatability, stability over time and similarity of results in a time period (Kirk and Miller, 1986). When assessing the reliability of the research, the qualitative nature of the research needs to be taken into consideration. As the results and observations were based on interviews, the results are highly dependent on context (e.g. time), individuals, and ability to represent the social system as a whole. It is impossible to determine with certainty, if chosen individuals are indeed representing the organization well enough to ensure repeatability. Still one of the goals of research design was to identify and access the right individuals, and great care was taken during the interviews to ensure reliability of answers and to filter out conversation affected by emotions.

Reliability of the analysis results was maximized by providing examples of the answers in citations to showcase the types of answers and the context. Another factor influencing qualitative case study is context, which makes repeatable research difficult, as any change in context may produce varying results. Thus theoretically the research was sufficient reliability, as with similar set of interview goals and interviewees, the research and results could be repeated.

Validity in qualitative research can be determined, according to Joppe (2000), as:

> *"…whether the research truly measures that which it was intended to measure or how truthful the research results are. In other words, does the research instrument allow you to hit "the bull's eye" of your research object?"*

In qualitative research context, the validity is often regarded as construct validity. Construct is the initial concept, question and framework, which determines what and how the data is gathered. The research questions of the thesis, and answers given to them, are discussed in chapter 5.3. There it is clearly stated that all research questions were answered to reasonable extent, even though room for improvement exists.

Due the qualitative and context related nature of the research, the results made are valid for this case, with the chosen scope and during the research time. Any chance in the context may affect the validity of the results. Additionally, managerial goas set for this paper were accomplished to sufficient level, and findings were recognized as valuable inputs. Even though success, from the case company perspective, does not bring academic validity for the paper it does however influence the overall validity of the results.

Transferability is concerned with the extent to which the findings of one study can be applied to other situations (Merriam, 1998). Often findings of qualitative projects are specific to a small number of environments and individuals, and thus it is difficult to prove transferability. However, some aspects of the research were made to improve transferability. Number of organizations taking part was maximized, as product management organization included personnel from almost all product lines with similar process structure. Both managerial level individuals and employees were used in the interviews to have unilateral view. Number of participants in the interviews was sufficient, even though preliminary research design had more individuals planned. Data collection locations included only one country in the Nordics, which limits the transferability to other social systems even within the same company. The time period of the research was five months, which is short for having long-term vision. Overall, transferability was in a level that results can be applied to other parts of the case company organization and to other organizations in similar fields in the Nordic countries.

5.4 Future Research Opportunities

To continue valuable research in the field of innovation adoption and organizational innovations, there are clearly three development routes for future research. Firstly, a longitudinal study could be made where cooperation with the case company was continued and deepened. Moreover, the factors discussed could be engaged, and the effects and the success of the change management project could be studied. This would require long commitment to the research from both researcher and company side.

Secondly, cooperation with the case company could be continued to study the use of the theoretical framework in other parts of the organization and in different country organizations. This way the effects of employee demographics and nationality could be observed. This would provide, not only a more reliable theoretical framework for innovation adoption in large global organization, but also a powerful tool for the case company management to use in managed innovation adoption projects.

Thirdly, additional single case studies or a multi-case study in IT companies could be with the same research framework in order to receive more holistic understanding of adoption of organizational innovations in IT companies, which tend to be knowledge-intensive organizations. More valuable and reliable theory based on empirical studies could be made based on that research.

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